

WHAT IS CLAIMED:

1. An apparatus for compressing and storing an oxygen-enriched gas, comprising:

5 a concentrated oxygen source having oxygen-enriched gas therein, wherein said oxygen-enriched gas contains at least about 50% oxygen by volume;

a radial piston compressor operatively connected to said oxygen source to receive prioritized oxygen-enriched gas therefrom, said radial compressor being capable of compressing said oxygen-enriched gas to a high pressure; and

a high-pressure storage container for portable storage of said high-pressure oxygen-enriched gas.

15 2. An apparatus according to claim 1, wherein said oxygen-enriched gas is prioritized by a portion thereof being capable of being fed to a person and a portion thereof being capable of being fed to said radial compressor, said prioritization includes a determination of a minimum oxygen concentration of said oxygen enriched gas by an oxygen sensor and the operation of said radial compressor being terminated when said enriched oxygen gas is below a predetermined oxygen level.

25 3. An apparatus according to claim 1, including a buffer tank, said buffer tank operatively connected to said oxygen source and to said radial compressor, wherein said oxygen-enriched gas is prioritized by a portion thereof being capable of being fed from said buffer tank to a person and a portion thereof being capable of being fed from said buffer tank to said radial compressor, said prioritization includes a determination of the oxygen concentration of said oxygen enriched gas

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by an oxygen sensor and the operation of said radial compressor being terminated when said enriched oxygen gas is below a predetermined oxygen level.

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4. An apparatus according to claim 1, wherein said oxygen-enriched gas is prioritized by a portion being capable of being fed to a person and a portion being capable of being fed to a compressor, wherein said prioritization includes terminating the flow of said oxygen-enriched gas to said high-pressure storage container when said enriched oxygen gas is below a predetermined oxygen level.

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5. An apparatus according to claim 3, wherein said radial compressor contains a plurality of cylinders each having a piston therein, wherein said pistons are radially arranged around a crankshaft, wherein said oxygen-enriched gas is sequentially compressed by each piston, and wherein each sequential cylinder has a smaller compressible area than the previous cylinder.

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6. An apparatus according to claim 4, wherein said radial compressor contains a plurality of cylinders each having a piston therein, wherein said pistons are radially arranged around a crankshaft, wherein said oxygen-enriched gas is sequentially compressed by each piston, and wherein each sequential cylinder has a smaller compressible area than the previous cylinder.

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7. An apparatus according to claim 3, wherein said oxygen source is an oxygen concentrator, and wherein said enriched oxygen gas is at least 85% oxygen by volume.

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8. An apparatus according to claim 4, wherein said oxygen source is an oxygen concentrator, and wherein said enriched oxygen gas is at least 85% oxygen by volume.

9. An apparatus according to claim 5, wherein said oxygen source is an oxygen concentrator, and wherein said enriched oxygen gas is at least 90% oxygen by volume.

10. An apparatus according to claim 6, wherein said oxygen source is an oxygen concentrator, and wherein said enriched oxygen gas is at least 90% oxygen by volume.

11. An apparatus for compressing and storing an oxygen-enriched gas, comprising:

a buffer tank operatively connected to a concentrated oxygen source, said buffer tank capable of feeding concentrated oxygen to a person; and

a radial compressor operatively connected to said buffer tank capable of receiving and compressing said concentrated oxygen.

12. An apparatus according to claim 11, wherein said radial compressor has a plurality of compression stages therein, wherein said radial compressor is capable of compressing said concentrated oxygen to a high pressure.

13. An apparatus according to claim 12, including a high-pressure storage container operatively connected to said radial compressor and capable of portable storage of said high-pressure concentrated oxygen.

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14. An apparatus according to claim 13, wherein said concentrated oxygen is prioritized by a portion thereof being capable of being fed to a person and a portion of said concentrated oxygen being capable of being fed to said radial compressor, wherein said prioritization includes termination of the flow of said concentrated oxygen to said high pressure cylinder when said concentrated oxygen is below a predetermined level.

15. An apparatus according to claim 14, wherein said concentrated oxygen is at least about 90% oxygen by volume, and wherein said oxygen flow to said high pressure cylinder is terminated by said radial compressor.

16. A radial multi-stage compressor comprising:
at least a two piston cylinder assembly for compressing oxygen enriched gas, which is capable of being fed to a patient, said piston cylinder assembly including a first piston cylinder assembly and a last piston cylinder assembly, said piston cylinder assemblies radially arranged around a crankshaft, said piston cylinder assemblies adapted to sequentially compress said oxygen enriched gas from said first assembly through said last assembly, said piston cylinder assemblies having sequentially smaller compressible volumes from said first assembly through said last assembly so that the volume of gas is reduced in each succeeding said piston cylinder assembly.

17. A radial compressor according to claim 16, wherein said pistons have head portions and each said sequential piston having a decreased head size than the prior piston.

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18. A radial compressor according to claim 17, wherein said crankshaft has an offset to allow each said piston to compress said oxygen-enriched gas.

19. A radial compressor according to claim 18, wherein each said sequential higher pressuring piston cylinder assembly is located in a non-adjacent position radially about the crankshaft of the compressor.

20. A process for filling a high-pressure portable container with concentrated oxygen under high pressure, comprising the steps of:

providing a concentrated oxygen source of at least about 70% oxygen by volume,

transferring said concentrated oxygen to a radial compressor at an initial pressure,

compressing said concentrated oxygen transferred to said compressor to a high pressure; and

transferring said high pressure concentrated oxygen from said radial compressor to a portable container for subsequent use by a patient.

21. A process according to claim 20, wherein said radial compressor contains a plurality of cylinders each having a piston therein, wherein said pistons are radially arranged around a crankshaft, wherein said oxygen-enriched gas is sequentially compressed by each piston, and wherein each sequential piston compresses said concentrated oxygen to a higher pressure than the previous piston.

22. A process according to claim 21, wherein the concentration of said concentrated oxygen is at least 90% by volume, and including compressing said concentrated oxygen to a pressure of from about 500

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to about 4,000 psi in said portable container.

23. A process according to claim 22, including prioritizing said concentrated oxygen by feeding a portion of said oxygen to a conduit capable of supplying said oxygen to a person and feeding a portion of said oxygen to said radial compressor.

24. A process according to claim 23, including pressurizing said concentrated oxygen to a pressure of from about 1,500 to about 3,000 psi in said portable container.

25. An apparatus for compressing oxygen-enriched gas, comprising:

a motor-driven compressor having an inlet and outlet, said outlet adapted to be connected to a gas storage tank;

an oxygen sensor, said oxygen sensor providing indication of acceptable oxygen levels in a sensed gas;

a normal mode inlet in communication with said compressor inlet, said oxygen sensor normally sensing the oxygen level in a gas applied to said normal mode inlet;

a test mode inlet operatively connected to said compressor; and

a test mode pressure switch, wherein application of pressurized oxygen to said test mode inlet causes said pressure switch to disable said compressor and said pressurized gas to be applied to said oxygen sensor.

26. An apparatus according to claim 25, wherein said oxygen sensor provides visual indication of said acceptable oxygen level.

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27. An apparatus according to claim 25, wherein removal of said pressurized gas from said test mode inlet causes said compressor to be enabled and said oxygen sensor to sense the oxygen level in said gas applied to said normal mode inlet.

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